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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,855	11/03/2001	James F. Cameron	50285	7120
21874	7590	04/15/2004		
EDWARDS & ANGELL, LLP P.O. BOX 55874 BOSTON, MA 02205			EXAMINER THORNTON, YVETTE C	
			ART UNIT	PAPER NUMBER
			1752	

DATE MAILED: 04/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/007,855	<b>Applicant(s)</b> CAMERON ET AL.	
	<b>Examiner</b> Yvette C. Thornton	<b>Art Unit</b> 1752	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 January 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 45-60 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 45-48, 50-52, 54 and 56-60 is/are rejected.
- 7) ☒ Claim(s) 49, 53 and 55 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

This is written in reference to application number 10/007855 filed on November 3, 2001 and published as US 2003/0027061 A1 on February 6, 2003.

#### *Response to Amendment*

1. Claims 1-44 have been cancelled. Claims 45-60 are currently pending and are newly added.
2. The cancellation of claims 5-17, 22-23 and 33-34 is sufficient to overcome the claims objections set forth in the previous office action.

#### *Claim Rejections - 35 USC § 103*

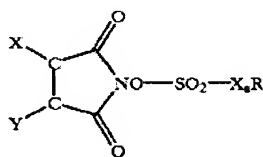
3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 45-48, 50-54 and 54-60 are rejected under 35 U.S.C. 103(a) as being obvious over Trefonas, III (US 6280911 B1).
5. The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which

corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

6. Trefonas teaches a chemically amplified positive acting photoresist composition comprising a resin binder which contains a polymer with photoacid labile groups and a blend of at least one non-ionic and at least one ionic photoacid generators (PAG) (c. 1, l. 66-c. 2, l. 30). A variety of ionic PAGs can be employed in the taught composition wherein onium salts are generally preferred (c. 2, l. 48-c. 4, l. 20). Among the non-ionic photoacid generators are



N-sulfonyloxyimides of the formula:

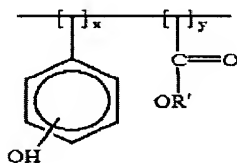
wherein X<sub>a</sub>R is -C<sub>n</sub>H<sub>2n+1</sub>, -C<sub>n</sub>F<sub>2n+1</sub>,

a camphor substituent, -2(9,10-diethoxy-anthracene), -(CH<sub>2</sub>)<sub>n</sub>-Z or -(CF<sub>2</sub>)<sub>n</sub>-Z where Z is H, C<sub>1-6</sub> alkyl, a camphor substituent, -2(9,10-diethoxyanthracene), or an aryl group (c. 4, l. 45-c. 5, l. 23). It is the examiner's position that the said N-sulfonyloxyimides meet the limitations of the claimed invention when X<sub>a</sub>R is -(CF<sub>2</sub>)<sub>n</sub>-Z and Z is C<sub>1-6</sub> alkyl, a camphor substituent, -2(9,10-diethoxyanthracene), or an aryl group. The C<sub>1-6</sub> alkyl group meets the limitation of an

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alkyl group (instant claim 46); the camphor substituent meets the limitation of an alicyclic group (instant claim 47); and the aryl group meets the limitation of a carbocyclic aryl group (instant claims 48).

7. Trefonas further teaches that a preferred resin binder for use at 248 nm imaging is a copolymer containing both phenolic and non-phenolic units that preferably are acrylate units. One such copolymer binder that is especially preferred has repeating units x and y of the



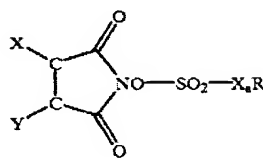
following formula

where R' is preferably tert-butyl (c. 11, l. 31-51).

For 193 nm imaging applications, preferably a resist resin binder component will be substantially free of any phenyl or other aromatic groups. Particularly preferred polymers are completely free of aromatic groups (c. 12, l. 50-60). Example 1 exemplifies a polymer comprising isobornyl methacrylate, tert-butyl methacrylate, methacrylic acid, methacrylonitrile and itaconic anhydride (c. 14, l. 45-c. 15, l. 3). The examiner is of the position that the said tert-butyl groups and isobornyl group meet the limitations of the claimed photoacid labile groups.

8. Trefonas however fails to exemplify a composition comprising an acid generator as discussed above. Due to the vast number of possible choices for the non-ionic photoacid generator, Trefonas fails to anticipate the claimed invention. However, it would have been obvious to one of ordinary skill in the art, in light of the disclosure of Trefonas, to make a photoresist composition suitable for 248 nm imaging or 193 nm imaging comprising the taught binders having acid labile groups and a N-sulfonyloxyimide photoacid generator of

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formula:

wherein  $X_aR$  is  $-(CF_2)_n-Z$  and  $Z$  is  $C_{1-6}$  alkyl, a camphor substituent, -2(9,10-diethoxyanthracene), or an aryl group.

9. The examiner notes that the comprising language of instant claims fails to prohibit the presence of the taught ionic photoacid generators.

10. Trefonas further teaches that in many instances, it will be preferred wherein the ionic and non-ionic PAGs generate the same or same class of acid compound upon exposure to activating radiation of the photoresist layer. Preferable examples include ionic and non-ionic PAG photoproducts that are camphor sulfonic acids or perfluoroalkyl sulfonic acids (c. 7, l. 18-30). One of ordinary skill in the art would have been motivated by this teaching to use an ionic (i.e., sulfonium or iodonium salt) and non-ionic PAG wherein both comprises a  $-(CF_2)_n-Z$  group where  $Z$  is a camphor substituent.

### *Allowable Subject Matter*

11. Claims 49, 53 and 55 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: review of the prior art failed to teach and/or suggest the limitations of the said claims wherein the reference has a priority date citable under 35 USC 102.

### *Response to Arguments*

13. Applicant's arguments, filed January 16, 2004, with respect to the prior art references of Pawlowski (EP 1033624 A1) and Sachdev (US 5296332 A) have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Trefonas, III (US 6280911 B1) as discussed above.

### *Conclusion*

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Kodama et al. (EP 1199603 A1), which is not citable as prior art due to the publication date of April 2002, which is later than the effective date of the present application. (See compounds A13, A48 and A49).
- Kodama et al. (US 2002/0102491 A1) which is the US equivalent of the above mentioned European case. The US publication also fails to meet the requirement of prior art under 35 USC 102.

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

16. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action.

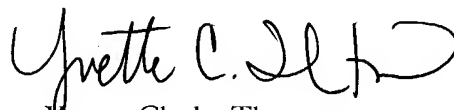
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In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvette C. Thornton whose telephone number is 571-272-1336. The examiner can normally be reached on Monday-Thursday from 8:00 am to 6:30 pm.

18. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F. Huff, can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

19. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Yvette Clarke Thornton  
Patent Examiner  
Art Unit 1752

yct  
April 8, 2004